

**Remarks:**

Claim amendments

Claims 1-20 and 24-31 are pending in the application.

Claim 9 is amended to include the correct usage of the Markush group format, as recommended by the examiner.

Claim 24 is amended to correct obvious typographical errors pointed out by the examiner. Further, the amended claim recites “phosphite ester,” not “phosphate ester.” This element is supported by the specification, p. 22, lines 8-9, step (c), describing the chemical reaction of the phosphite ester into a phosphotriester.

No new matter is introduced by the amendments and entry of the amendments is respectfully requested.

Claim rejections under 35 U.S.C. § 112

Claims 9-20 and 24-31 were rejected under 35 U.S.C. § 112 (second paragraph) as indefinite. The rejections are obviated by amendments.

With respect to claim 9, the amendments correct the forms of the Markush groups (“selected from the group consisting of R<sup>5</sup>, R<sup>6</sup> ~~or~~ and R<sup>7</sup>”), as kindly recommended by the examiner. In view of the amendments, withdrawal of the rejection is respectfully requested.

Claims 10-20 and 24-31 depend upon claim 9 and received no separate rejections (except claim 24, corrected separately). In view of the amendments to claim 9, withdrawal of the rejections of the dependent claims is also respectfully requested.

With respect to claim 24, the amendments include corrections of the two identical typographical errors: “~~phosphate~~ phosphate ester,” which were also kindly pointed out by the examiner. In view of the amendments, withdrawal of the rejection is respectfully requested.

Claim rejections under 35 U.S.C. §103

Claims 1-20 were rejected as obvious over Sheng-Hui, WO 97/43451, in view of previously cited references DeClerq and Alexander. The rejections are respectfully traversed.

Without admitting that a person of ordinary skill in the art would have in fact, combined Sheng-Hui with DeClerq and Alexander, the applicants respectfully point out

that the hypothetical combination would lack at least one element of the applicants' claims or any suggestion of that missing element.

Specifically, the primary reference (Sheng-Hui) teaches a different arrangement of substituents in a cyclic moiety than the arrangement in the applicants' claims. Neither Sheng-Hui, nor the secondary references teach or suggest that the arrangement can be varied. The secondary references are cited for teaching a different cyclic moiety (1,5-anhydrohexitol in place of cyclohexane).

With respect to claim 1, the primary reference Sheng-Hui teaches and claims a sequence R1-X-C-C-R2-C-R3, or since R2 is defined as X1-X2-X3, the sequence R1-X-C-C-X1-X2-X3-C-R3. In the formula, X1 is a cyclic moiety (see p. 5). The linear formula does not indicate the positions within the cyclic moiety X1 where the remaining groups are attached. There are many possible combinations for the relative placement of groups R1-X-C and C-R3 around the ring of the cyclic moiety. MPEP 2163(I)(A) cites a CCPA opinion stating "a 'laundry list' disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not 'reasonably lead' those skilled in the art to any particular species." Without further clarification, the linear "formula" in Sheng-Hui does lead one to any particular compound. Therefore, for the claims in the Sheng-Hui application to be valid in accordance with the written description requirements, the positions of the substituents in the cyclic moiety must be found in the specification if such information is available.

Sheng-Hui specification teaches six exemplary compounds. In all the six compounds, the substituents R1 and R3 are placed at *the same atom* in the cyclic moiety. Compound 1 (p. 14), Compound 2 (p. 18), Compound 3 (p. 21) and Compound 6 (p. 28) have R1 as DMT and R3 as phosphoramidite. In these four compounds, R1-O-C- and C-R3 are both attached to *the same carbon atom* in the cyclohexane. Compound 4 (p. 24) and Compound 5 (p. 26) have R1 as DMT and R3 as -OCOCH<sub>2</sub>CH<sub>2</sub>CONH-[glass particle]. In these compounds, R1-O-C- and C-R3 are also both attached to *the same carbon atom* in the cyclohexane. In the applicants' invention, no two groups are linked to the same atom of the cyclic moiety.

Sheng-Hui does not teach or suggest that the relative positions of the groups could be varied. DeClerq and Alexander do not teach or suggest varying the positions of substituents around their respective cyclic moieties. DeClerq teaches 1,5-anhydrohexitol with a heterocyclic ring derived from a pyrimidine or purine base as a substituent. Alexander teaches pyrans and furans with a heterocyclic base and a phosphate as

substituents. Thus the secondary references merely provide a cyclic moiety not taught in Sheng-Hui.

Because the hypothetical combination of three references suggested in the Office Action lacks at least one element of the applicants' claims, the position of substituents in the cyclic moiety, the §103 rejection of claim 1 over Sheng-Hui in view of DeClerq and Alexander may not be sustained. Reconsideration and withdrawal of the rejection is respectfully requested.

The remaining claims 5-8 depend ultimately on claim 1 and received no separate rejections. Withdrawal of the rejection of the dependent claims is likewise, respectfully requested.

The foregoing applies equally to claim 9, which instead of the substituent R<sup>1</sup> has a different substituent R<sup>7</sup>. In addition to a protective group, a label and a solid support, R<sup>7</sup> can also be "an oligonucleotide." This feature of R<sup>7</sup> does not alter the features of the compound in claim 9 that are identical to the corresponding features of the compound in claim 1 *vis-a-vis* the prior art. The analysis with respect to the placement of substituents around the cyclic moiety applies to claim 9 in the same way as to claim 1.

For the reasons stated with respect to claim 1, withdrawal of the obviousness rejection of claim 9 over Sheng-Hui in view of DeClerq and Alexander is also respectfully requested.

Claims 13-20 depend upon claim 9 and received no separate rejections. Withdrawal of the obviousness rejections of the dependent claims is respectfully requested.

Claims 24-31 received no rejections over prior art at all. Since MPEP 707.07(g) requires that all valid grounds for rejection be presented at once to avoid piece-meal examination, it is presumed that no such grounds in fact exist. Allowance of claims 24-31 is respectfully requested.

#### Conclusion:

It is believed that all claims are now in condition for allowance. It is believed that no fee is due at this time, however, the Commissioner is hereby authorized to charge any fee deficiency, or credit any overpayment to Deposit Account No. 50-0812.

If the Examiner believes that a telephone conference would expedite prosecution of this application, please call the undersigned directly at the number below.

Respectfully submitted,

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